

WHAT IS CLAIMED IS:

1. An automatic calibration method for use in an electronic compass calculating an azimuth angle based on a geomagnetic sensor signal, comprising the steps of:

a) initializing and driving a geomagnetic sensor, receiving geomagnetic data from the geomagnetic sensor, and calculating an azimuth angle on the basis of the geomagnetic data;

b) detecting a current state of an entry signal using the received geomagnetic data;

c) finding maximum and minimum values of sensor signals of individual axes of the geomagnetic sensor using the received geomagnetic data;

d) determining whether a time consumed for calibration is the same or shorter than a predetermined maximum calibration effective time;

e) if it is determined that the time consumed for calibration is the same or shorter than the maximum calibration effective time, determining whether a current state of the detected entry signal corresponds to a predetermined steady-state flow;

f) if it is determined that the current state of the detected entry signal corresponds to the steady-state flow, determining whether a signal indicative of one rotation of

the geomagnetic sensor is received;

g) if it is determined that the signal indicative of one rotation of the geomagnetic sensor is received, determining whether the current time is longer than a
5 predetermined minimum calibration effective time; and

h) if it is determined that the time consumed for calibration is longer than the minimum calibration effective time, calculating offset and scale values using the maximum and minimum values, and storing the calculated offset and
10 scale values and azimuth data.

2. The method as set forth in claim 1, wherein the step (b) for detecting the current state of the entry signal includes the step of:

15 b1) dividing one cycle of the geomagnetic sensor signal into a plurality of states S1~S4, and determining which one of the states corresponds to the current state of the entry signal on the basis of the received geomagnetic data.

20 3. The method as set forth in claim 1, wherein the step (d) for determining whether the maximum calibration effective time elapses includes the step of:

d1) if it is determined that the time consumed for calibration is longer than the maximum calibration effective
25 time, returning to an initial step.

4. The method as set forth in claim 1, wherein the steady-state flow of the step (e) is comprised of a predetermined plurality of steady-state flows SF1~SF4 or SF5~SF8 to determine whether a signal of the geomagnetic sensor indicates a steady-state signal entry order using the plurality of states S1~S4.

5. The method as set forth in claim 1, wherein the steady-state flow of the step (e) is set to either a plurality of clockwise steady-state flows SF1~SF4 or a plurality of counterclockwise steady-state flows SF5~SF8 using the plurality of states S1~S4.

6. The method as set forth in claim 1, wherein the step (f) for determining whether the signal indicative of one rotation of the geomagnetic sensor is received includes the step of:

f1) if it is determined that the signal indicative of one rotation of the geomagnetic sensor is not received, determining that the geomagnetic sensor is not rotated one time, and returning to the step (a) for driving the geomagnetic sensor.

7. The method as set forth in claim 1, wherein the step

(g) for determining whether the minimum calibration effective time is provided includes the step of:

g1) if the time consumed for calibration is the same or shorter than the minimum calibration effective time,

5 returning to an initial step.